

## CLAIMS

What is claimed is:

1. A piston assembly, comprising:
  - a piston having a wrist pin bore;
  - a connecting rod having a wrist pin bore; and
  - a wrist pin receivable in said bores to connect said piston to said connecting rod, said wrist pin having an outer surface roughness no greater than  $10\mu\text{m}$ , a Kurtosis value that is inversely proportional to said surface roughness such that the product of said Kurtosis value and said surface roughness is between about  $0.3\mu\text{m}$  to  $60\mu\text{m}$ , a skewness of about  $-1.0$  to  $0.0$ , and a lay angle relative to an axis of said wrist pin of  $85$  to  $95$  degrees.
2. The piston assembly of claim 1, wherein said wrist pin bores are bushingless and covered by a low friction coating.
3. The piston assembly of claim 2, wherein said low friction coating comprises manganese phosphate.
4. The piston assembly of claim 1, wherein said piston includes a piston body formed with said wrist pin bore and a piston skirt formed as one piece with said piston body of the same material.
5. A wrist pin for joining a connecting rod to a piston, said wrist pin comprising:
  - a generally cylindrical wrist pin body having a central longitudinal axis and an outer surface; and
  - wherein said outer surface is characterized by having an outer surface roughness of no greater than  $10\mu\text{m}$ , a Kurtosis value that is inversely proportional to the surface roughness such that the product of the Kurtosis value and the surface

roughness is between 0.3  $\mu\text{m}$  and 60  $\mu\text{m}$ , a skewness of about  $-1.0$  to  $0.0$  and a lay angle relative to the axis of rotation of about 85 to 95 degrees.